This work is dedicated to the study of two antiferromagnetic materials that are suitable for use in spintronic devices. In series of FeRh samples we studied the transition temperature between the antiferromagnetic and ferromagnetic phases. We developed a method based on material optical response for a quick determination of this temperature, which enabled us to study with a spatial resolution of 1 μm a magnetic inhomogeneity of prepared samples.We also developed a method for a determination of the Néel temperature and the magnetization easy axis position in thin films prepared from compensated antiferromagnetic metal. We successfully applied this method on an uniaxial sample of CuMnAs and we discussed its applicability for a research of samples with a biaxial magnetic anisotropy.